Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

# THE BOTANICAL GAZETTE

THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS

---

Agents

THE CAMBRIDGE UNIVERSITY PRESS
LONDON AND EDINBURGH

THE MARUZEN-KABUSHIKI-KAISHA
TOKYO, OSAKA, KYOTO

KARL W. HIERSEMANN
LEIPZIG

THE BAKER & TAYLOR COMPANY
NEW YORK

# THE BOTANICAL GAZETTE

EDITOR
JOHN MERLE COULTER

VOLUME LVIII

JULY–DECEMBER 1914

WITH THIRTY-FOUR PLATES AND ONE HUNDRED AND FIFTY-FOUR FIGURES

THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS

Published
July, August, September, October, November, December, 1914

Composed and Printed By
The University of Chicago Press
Chicago, Illinois, U.S.A.

# TABLE OF CONTENTS


| | | PAGE |
|---|---|---|
| The morphology and cytology of the aecidium cup (with plates I and II and eight figures) - - | *F. D. Fromme* | 1 |
| Investigations on the phylogeny of the Angiosperms (with plates III–V and three figures) | *Irving W. Bailey* and *Edmund W. Sinnott* | 36 |
| The anatomy of six epiphytic species of *Lycopodium*. Contributions from the Hull Botanical Laboratory **189** (with twenty-eight figures) - | *J. Ben Hill* | 61 |
| A study of the germinating power of seeds (with eighteen figures) | *M. L. Darsie, Charlotte Elliott,* and *George J. Peirce* | 101 |
| The development of the embryo sac in the Convallariaceae (with plates VI and VII) - - | *F. McAllister* | 137 |
| Comparative morphology of some Leguminosae. Contributions from the Hull Botanical Laboratory **190** (with plates VIII–XI) - - | *John N. Martin* | 154 |
| Contributions to the anatomy of Mesozoic Conifers. No. 2. Cretaceous lignites from Cliffwood, New Jersey (with plates XII–XV) - - | *Ruth Holden* | 168 |
| Quantitative criteria of antagonism (with four figures) - - - - - - - - - | *W. J. V. Osterhout* | 178 |
| Evaporation and soil moisture in relation to the succession of plant associations. Contributions from the Hull Botanical Laboratory **191** (with twenty-seven figures) - - - - | *George D. Fuller* | 193 |
| On certain peculiar fungus-parasites of living insects (with plates XVI–XIX) - - - - | *Roland Thaxter* | 235 |
| Thermotropism of roots. Contributions from the Hull Botanical Laboratory **192** (with six figures) - - - - - - - - - | *Sophia Eckerson* | 254 |
| Oogenesis in *Hormosira*. Contributions from the Hull Botanical Laboratory **193** (with plate XX and seven figures) - - - - - - | *M. R. Getman* | 264 |
| The measurement of antagonism (with three figures) - - - - - - - - | *W. J. V. Osterhout* | 272 |

PAGE

Field notes on the climbing bamboos of Porto Rico (with plate XXI) - - - - - - - *Agnes Chase* 277

Delayed germination in seed of *Alisma Plantago*. Contributions from the Hull Botanical Laboratory **194** (with eight figures) *William Crocker* and *Wilmer E. Davis* 285

Spore conditions in hybrids and the mutation hypothesis of De Vries (with plates XXII–XXV) - - - - - - - - - *Edward C. Jeffrey* 322

Reproduction in plants. Contributions from the Hull Botanical Laboratory **195** - - - *John M. Coulter* 337

New or peculiar Zygomycetes. 3: *Blakeslea*, *Dissophora*, and *Haplosporangium*, Nova Genera (with plates XXVI–XXIX) - - - - *Roland Thaxter* 353

The forms of antagonism curves as affected by concentration (with three figures) - - - *W. J. V. Osterhout* 367

Prairie vegetation of a mountain-front area in Colorado (with nine figures) - - - - *Arthur G. Vestal* 377

A study of *Symphyogyna aspera*. Contributions from the Hull Botanical Laboratory **196** (with plates XXX–XXXII) - - - - *Florence A. McCormick* 401

Spermatogenesis in *Marsilia*. Contributions from the Hull Botanical Laboratory **197** (with plates XXXIII and XXXIV) - - - *Lester W. Sharp* 419

The plant successions of the Holyoke Range. Contributions from the Hull Botanical Laboratory **198** (with map) - - - - - *Edith A. Roberts* 432

Histology of flax fruit (with four figures) - - *Kate B. Winton* 445

The transpiration of emersed water plants: its measurement and its relationships (with three figures and fourteen charts) - - - - *Charles H. Otis* 457

Contributions to the knowledge of the diaphragms of water plants. I. *Scirpus validus* (with sixteen figures) - - - - - - - *Laetitia M. Snow* 495

Fasciation (with seven figures) - - - - *M. A. Brannon* 518

BRIEFER ARTICLES—

Philippe Edouard Leon van Tieghem (with portrait) - - - - - - - - - *John M. Coulter* 527

Retention of chlorophyll through the paraffin process - - - - - - - - - *E. G. Anderson* 528

PAGE

CURRENT LITERATURE - - - - - - 86, 187, 280, 372, 449, 529

For titles of book reviews see index under author's name and reviews

Papers noticed in "Notes for Students" are indexed under author's name and subjects

---

## DATES OF PUBLICATION

No. 1, July 17; No. 2, August 19; No. 3, September 15; No. 4, October 15; No. 5, November 16; No. 6, December 21.

## ERRATA

### Vol. LVIII

P. 70, line 3 from top, for types read type.
P. 159, line 3 from top, for seem read seems.
P. 182, line 3 from bottom, for *VSW* read *VTW*.
P. 367, last line, for $\frac{FD-FG}{FG}$ read $\frac{FD}{FG}$.
P. 401, line 8 from top, for *Jungermanni* read *Jungermannia*.
P. 436, line 15 from top, for recent read ancient.